

REMARKS

Claims 1-37 are pending. Claims 1, 11, 21 and 22 have been amended and claims 35-37 have been added. Reconsideration and allowance of the present application based on the above amendments and the following remarks are respectfully requested.

The Office Action Summary (PTO-326) and page 2, paragraph 1 of the Office Action indicate that none of Applicants' certified copies of the priority documents have been received. Applicants submitted certified copies of the priority documents with the application on September 1, 2000. Enclosed are copies of the front two pages of each priority document. The Examiner is respectfully requested to acknowledge receipt of the priority documents in the next Office Action.

The Office Action Summary (PTO-326) also indicates that a copy of the PTO-1449 submitted with the September 1, 2000 Information Disclosure Statement was enclosed with the November 8, 2001 Office Action. The undersigned has not yet received the initialed, signed and dated PTO-1449. The Examiner is requested to provide the undersigned with a copy of the PTO-1449 in the next Office Action.

Claim 22 was rejected under 35 U.S.C. §112, second paragraph. Claim 22 has been amended in accordance with the suggestion of the Office Action. Accordingly, Applicants respectfully request the withdrawal of the rejection with respect to claim 22.

Claims 1-4, 10, 21-23, 26-28 and 34 were rejected under 35 U.S.C. §102 (b) over Butterworth et al. (U.S. Patent No. 5,847,507). The rejection is respectfully traversed.

Claim 1 recites a semiconductor light-emitting device comprising a substrate, a light-emitting layer and a reflecting layer, wherein the reflecting layer is positioned closer to the substrate than the light-emitting layer.

Butterworth merely discloses a light source comprising a light emitter to emit light of a first wavelength and a lens to focus the light emitted from the light source. The lens includes a fluorescent material to absorb light of the first wavelength and re-emit light of a second wavelength. Butterworth fails to disclose a semiconductor light-emitting device having the structure recited in claim 1.

Claims 2-4 and 10 depend from claim 1 and are patentable by virtue of their dependence on independent claim 1, in addition to their recitation of additional patentable subject matter.

Further, claim 21 recites a third light source comprising a red color LED configured to emit red light. As stated above, Butterworth merely discloses a light source comprising a light emitter to emit light of a first wavelength and a lens to focus the light emitted from the light source. Butterworth fails to disclose a third light source comprising a red color LED configured to emit red light, as recited in claim 21.

Claims 22-23, 26-28 and 34 depend from claim 21 and are patentable by virtue of their dependence on independent claim 21, in addition to their recitation of additional patentable subject matter.

Withdrawal of the rejection of independent claims 1 and 21 (and their dependent claims 2-4, 10, 22-23, 26-28 and 34) is respectfully requested.

Claims 1-7, 9, 10, 21-23, 26-31, 33 and 34 were rejected under 35 U.S.C. §103 (a) over Vriens et al. (U.S. Patent No. 5,813,753), in view of Butterworth et al. The rejection is respectfully traversed.

Claim 1 recites a secondary light source that emits light based on light given from a primary light source so that light of the primary light source and the secondary light source are mixed together to thereby generate light different in luminescent color from the light emitted from the primary light source.

Vriens et al. disclose a light emitting device comprising blue/UV LEDs emitting blue/UV light and phosphors emitting light of a single color or multiple colors in order to absorb the UV/blue light and re-emit a secondary color or colors to get a good color rendering. Neither the blue/UV LEDs nor the phosphors of Vriens et al. include a fluorescent material, as recited in claim 1. Further, since Vriens et al. fails to teach or suggest a fluorescent material in either the blue/UV LEDs or the phosphors, Vriens et al. also fails to teach or suggest a secondary light source including a fluorescent material that emits light based on light given from a primary light source so that light of the primary light source and the secondary light source are mixed together to thereby generate light different in luminescent color from the light emitted from the primary light source, as recited in claim 1.

Butterworth et al. disclose fluorescent dyes which absorb light of one wavelength and emit light of another, longer wavelength. Even if the fluorescent dyes of Butterworth et al. could be combined with the light emitting device taught by Vriens et al., the combination would not produce a secondary light source including a fluorescent material that emits light

based on light given from a primary light source so that light of the primary light source and the secondary light source are mixed together to thereby generate light different in luminescent color from the light emitted from the primary light source, as recited in claim 1.

Claims 2-7, 9 and 10 depend from claim 1 and are patentable by virtue of their dependence on independent claim 1, in addition to their recitation of additional patentable subject matter.

Further, claim 21 recites a third light source comprising a red color LED configured to emit red light, which is neither disclosed nor suggested by Vriens et al. or Butterworth et al.

Claims 22-23, 26-28 and 34 depend from claim 21 and are patentable by virtue of their dependence on independent claim 21, in addition to their recitation of additional patentable subject matter.

Withdrawal of the rejection of independent claims 1 and 21 (and their dependent claims 2-4, 10, 22-23, 26-28 and 34) is respectfully requested.

Claims 1-7, 9, 10, 21-23, 26-31, 33 and 34 were rejected under 35 U.S.C. §103 (a) over Vriens et al. in view of JP 10-163 (JP 535). The rejection is respectfully traversed.

It is respectfully submitted that JP 535 also fails to cure the deficiencies of Vriens et al. discussed above with respect to Butterworth et al. as JP 535 fails to disclose or suggest a secondary light source including as recited in claim 1 and a third light source as recited in claim 21.

Withdrawal of the rejection of independent claims 1 and 21 (and their dependent claims 2-4, 10, 22-23, 26-31, 33 and 34) is respectfully requested.

Claims 8 and 32 were rejected under 35 U.S.C. §103 (a) over either one of Vriens et al. in view of Butterworth et al. or Vriens et al. in view of JP 535, as applied to the claims above, and further in view of Lowery (U.S. Patent No. 5,959,316). The rejection is respectfully traversed.

According to the Office Action, Lowery teaches or suggests grading for a fluorescent material. However, Lowery fails to cure the deficiencies of Butterworth et al., Vriens et al. and JP 535 with respect to independent claims 1 and 21.

Claims 8 and 32 depend from claims 1 and 21 respectively, and are patentable by virtue of their dependence on independent claims 1 and 21, in addition to their recitation of additional patentable subject matter.

Withdrawal of the rejection of dependent claims 8 and 32 is respectfully requested.

Claim 24 was rejected under 35 U.S.C. §103 (a) over Vriens et al. in view of Butterworth et al. or Vriens et al. in view of JP 535, as applied to the claims above, and further in view of the Phosphor Handbook. The rejection is respectfully traversed.

The Office Action acknowledges that Vriens et al., Butterworth et al. and JP 535 all fail to disclose the use of CaS:Eu phosphors for emitting red light, then cites the pages 192-193 of the Phosphor Handbook as disclosing CaS:Eu phosphors that emit red light. The Office Action then alleges the use of CaS:Eu phosphors to emit red light would have been an obvious design consideration. It is respectfully submitted that the alleged motivation of “obvious design consideration” is nothing more than a hindsight reconstruction of Applicants’ invention as no motivation, absent Applicants’, is found in the prior art.

Withdrawal of the rejection of dependent claim 24 is respectfully requested.

Claims 11-20 were rejected under 35 U.S.C. §103 (a) over Vriens et al. in view of Lowery (for claim 18 only), as applied to the claims above, and further in view of Do et al. (U.S. Patent No. 5,958,296). The rejection is respectfully traversed.

Applicants request clarification of the application of Lowery. If Lowery is relied upon only to show the features recited in claim 18, its application against claims 11-17, 19 and 20 is improper and should be withdrawn.

Claim 11 recites a third light source including a second fluorescent material configured to absorb the light of the primary light source configured, wherein the third light source is configured to emit red light. As discussed above, as Vriens et al. fails to disclose this feature and Do et al. fail to cure the deficiencies of Vriens et al. and Lowery, the combination of the three references can not result in the invention of claim 11.

Claims 12-20 depend from claim 11 and are patentable by virtue of their dependency on independent claim 11, in addition to their recitation of additional patentable subject matter.

Claim 25 was rejected under 35 U.S.C. §103 (a) over Vriens et al. The rejection is respectfully traversed.

Claim 25 depends on claim 21 and thus includes all of the features of claim 21. Claim 21 was rejected over the combination of Vriens et al. in view of Butterworth et al. or JP 535. The rejection of claim 25 over Vriens et al. above is improper as it fails to establish a *prima facie* case of obviousness as it does not include the features allegedly disclosed or suggested

by Butterworth et al. or JP 535. It is respectfully submitted that any rejection of claim 25 over the combination of Vriens et al. in view of Butterworth et al. or JP 535 must be non-final.

Withdrawal of the rejection of dependent claim 25 is respectfully requested.

New claims 35-37 depend from claim 11 and are patentable by virtue of their dependence on independent claim 11, in addition to their recitation of additional patentable subject matter.

For the foregoing reasons, Applicants respectfully submit that claims define patentable subject matter and that the entire application is in condition for allowance. Timely notice to that effect is therefore respectfully requested.

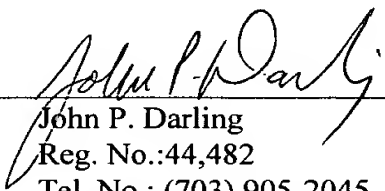
Should the Examiner believe that anything further is desirable to place the application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

Respectfully submitted,

Pillsbury Winthrop LLP

By:


John P. Darling

Reg. No.: 44,482

Tel. No.: (703) 905-2045

Fax No.: (703) 905-2500

JPD/JMS/mjb

Attachments:

Appendix

Copies of first two pages of Japanese

Applications 11-249350 and 11-359920

1600 Tysons Boulevard

McLean, VA 22102

(703) 905-2000

Enclosure: Appendix

APPENDIXVERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE CLAIMS:

Claims 1, 11, 21 and 22 have been amended as follows:

1. (Amended) A light-emitting apparatus comprising:
 - a primary light source including a semiconductor light-emitting device with an emission wavelength of from 380 nm to 500 nm; and
 - a secondary light source including a fluorescent material [composed of ZnS:Cu, Au, A1];wherein said secondary light source emits light based on light given from said primary light source so that light of said secondary light source and the light of said primary light source are mixed together to thereby generate light different in luminescent color from the light emitted from said primary light source, and
wherein the semiconductor light-emitting device comprises:
 - a substrate;
 - a light-emitting layer configured to emit light and positioned a first distance from the substrate; and
 - a reflection layer configured to reflect light toward a light extracting direction and being positioned a second distance from the substrate, wherein the second distance is less than the first distance so that the reflection layer is positioned closer to the substrate than the light-emitting layer.

11. (Amended) A light-emitting apparatus comprising:
 - a primary light source including a semiconductor light-emitting device with an emission wavelength of from [380] 420 nm to [500] 490 nm; [and]
 - a secondary light source including a fluorescent material composed of at least one member selected from the group consisting of ZnS:Eu, YVO₄:Ce and Y₂O₂S:Ce; and
 - a third light source including a second fluorescent material configured to absorb the light of said primary light source, the third light source being configured to emit red light,

wherein said secondary light source emits light based on light given from said primary light source so that light of said secondary light source and the light of said primary light source are mixed together to thereby generate light different in luminescent color from the light emitted from said primary light source.

21. (Amended) A light-emitting apparatus comprising:
- a first light source including a semiconductor light-emitting device configured to emit [for emitting] blue light;
 - a second light source including a first fluorescent material configured to absorb [for absorbing] light of said primary light source and configured to emit [emitting] green light;
 - and
 - a third light source comprising a red color LED configured to emit [for emitting] red light;
- wherein the light of said first light source, light of said second light source and light of said third light source are mixed together to thereby generate white light.

22. (Amended) A light-emitting apparatus according to claim 21, wherein said first fluorescent material is composed of at least one member selected from the group consisting of ZnS:Cu, Au, AL; ZnS:Cu; ZnS:Mn; ZnS:Eu; [YVO₄:Eu;] YVO₄:Ce; Y₂O₂S:Eu and Y₂O₂S:Ce.

Claims 35-37 have been added.